

Objective:

The point of this program is to simulate an elevator of a three-story building using ladder language.

Inputs:

I1: WeightSensor

I2: DoorSensor

I3: ButtonAtGF

I4: ButtonAtF1

I5: ButtonAtF2

I7: GF inside E1

I8: F1 inside E1

I9: F2 inside E1

ID: GF inside E2

IE: F1 inside E2

IF: F2 inside E2

IJ: E1 OFF

IK: WeightSensor2

IL: DoorSensor2

Relays:

M1: GroundFloor E1

M2: FirstFloor E1

M3: SecondFloor E1

M5: GoingDown2

M6: GoingDown1

M7: GoingUp1

M8: GoingUp2

M9: GF Button E1

MA: F1 Button E1

MB: F2 Button E1

ME: E2time15

MF: E1time15

MH: WeightSensor E1

MJ: WeightSensor E2

MK: GF Button E2

ML: F1 Button E2

MN: F2 Button E2

MQ: E1 OFF

N1: GroundFloor E2

N2: FirstFloor E2

N3: SecondFloor E2

N9: Button F2 E2

NA: Button F1 E2

NB: Button GF E2

Outputs:

Q1: F2Open E1

Q2: F2Close E1

Q3: F2Open E2

Q4: F2Close E2

Q5: ButtonAtF2

Q7: F1Open E1

Q8: F1Close E1

Q9: F1Open E2

QA: F1Close E2

QB: ButtonAtF1

QC: ButtonAtGF

QD: GFOpen E1

QE: GFClose E1

QF: GFOpen E2

QG: GFClose E2

Timers:

T1: 15SEC E1

T2: 5SEC E1

T3: 15SEC E2

T4: 5SEC E2

Schematic Diagram



How the program works:

This specific program has four floors, including a ground floor. There are two elevators available, one of them being a backup, and only one button outwards on each floor. The first elevator goes to the highest floor requested from the outside and then makes any necessary stops on the way down. The buttons inside the elevator do not function unless there's a weight sensed inside. If the doors are open and someone stands at the entrance of the elevator between the doors, the door timer suspends and the doors don't close until no one is between the doors.

The second elevator works with the same concept, but it can only be called upon on the ground floor while the first elevator is going up. In case the first elevator stops working, the second elevator takes over and works exactly like the main elevator did.